

Argument u .		Position.		Distance.	
A.	B.	A.	B.	<i>Deimos</i> .	<i>Phobos</i> .
0	180	178°8	358°8	20'4	8'2
10	190	144°5	324°5	16'8	6'7
20	200	109°3	289°3	19'9	8'0
30	210	88°4	268°4	27'3	10'9
40	220	77°0	257°0	35'8	14'3
50	230	70°1	250°1	44'2	17'7
60	240	65°3	245°3	51'6	20'7
70	250	61°4	241°4	57'7	23'1
80	260	58°4	238°4	62'3	25'0
90	270	55°6	235°6	65°2	26°1
100	280	53°1	233°1	66°2	26°5
110	290	50°5	230°5	65°1	26°2
120	300	47°8	227°8	62°6	25°1
130	310	44°8	224°8	58°0	23°3
140	320	41°1	221°1	52°1	20°9
150	330	36°4	216°4	44°8	17°9
160	340	29°6	209°6	36°5	14°6
170	350	18°7	198°7	27°9	10°6
180	360	358°8	178°8	20°4	8°2

According to Prof. Newcomb's elements the values of the argument u at Greenwich mean midnight are—

Nov. 2	<i>Deimos</i> 331°1	<i>Phobos</i> 89°8
12	" 302°7	" 217°7
22	" 274°4	" 345°7

and the diurnal motions of u are $285^{\circ}1645$ and $1128^{\circ}794$ for *Deimos* and *Phobos* respectively, giving hourly motions of $11^{\circ}882$ and $47^{\circ}033$, whence u for the time of observation may be found. Or if the observer possesses Newcomb's memoir on the satellites he may find it from the table at p. 42. Then with u as the argument the above table gives roughly the angle of position and distance of the satellite, remarking that the former is to be taken in column A or column B, according as the argument is found under A or B. Thus for midnight on November 5 the value of u for *Deimos* is $106^{\circ}6$, and for *Phobos* $236^{\circ}3$, whence the positions and distances are: for *Deimos* 51° and $65''$, and for *Phobos* 247° and $20''$.

THE SATURNIAN SATELLITE, MIMAS.—This faint object was observed by Mr. A. Ainslie Common, of Ealing, with his 3-feet reflector, on the night of September 21, when close up to its conjunction with the following extremity of the ring, which was estimated to take place about 11h. 50m. G.M.T. With the elements which have been previously used in this column the satellite would be up to the ring at 11h. 53m. Such observations as this are of course much more valuable for the correction of elements than estimations of the times of greatest elongations; nevertheless as it is in or near the latter positions that the satellite is most likely to be visible in telescopes of inferior power, we subjoin the times of greatest elongations observable in this country up to the end of the present month:—

EAST.		WEST.	
Oct. 9 ...	h. m. 12 20	Oct. 16 ...	h. m. 13 56
10 ...	10 56	17 ...	12 33
11 ...	9 53	18 ...	11 10
12 ...	8 10	19 ...	9 47
13 ...	6 47	20 ...	8 23
		21 ...	7 0
24 ...	14 10	Nov. 2 ...	12 58
25 ...	12 47		
26 ...	11 24		
27 ...	10 0		
28 ...	8 37		
29 ...	7 14		

THE MINOR PLANETS.—Two small planets assumed to be new have been detected by Prof. Peters, of Clinton, N.Y., apparently on September 22 and 26 respectively; the number being thus raised to 203. Prof. Watson, now

in direction of the Washburn Observatory, Madison, Wisconsin, has selected the following names for planets discovered by him in 1877: for 174, *Phædra*; for 175, *Andromache*; and for 179, *Clytemnestra*. *Fortuna* will be in opposition on October 23 close up to perihelion, so that the possible brightness, $8.5m$, will be at its maximum.

GEOGRAPHICAL NOTES

DR. HOLUB, the eminent African traveller, who is now in England on his way to his native country (Bohemia), intends, it is stated, shortly to undertake another exploring expedition. His return to Europe has for its main object the collection of the necessary funds for the new undertaking. He has formed plans for the formation of an international expedition, which is to be placed under his direction and which is to travel through Africa from Port Elizabeth towards Egypt. The exploring party is to consist of twelve members representing twelve different nations, and the costs of the expedition are to be defrayed by the different governments. The special purpose of the expedition is stated to be the opening of Central Africa towards the south and east and to facilitate the colonisation of the district between the Vaal River and the Zambesi. A correspondent in the *Times* gives the following interesting summary of the remarkable work accomplished by Dr. Holub:—"For seven years Dr. Holub has been exploring the country north and south of the Zambesi, alternating his exploring expeditions with months spent at the Diamond-fields, practising as a medical man to raise the requisite funds for his next journey. In this time the doctor has studied the habits of the Matabele, the Marutsi, Hottentots, Bechuanas, and numerous other tribes, living among them as their guest, and gaining their confidence by curing their sick. In Dr. Holub's third and last journey he has accurately surveyed the country from the Diamond Fields to the Zambesi, and the Zambesi from its junction with the Chobe to the Barotse country. His map of the Zambesi is on a large scale, and shows every island, creek, and rapid. To show the difficulties of this survey, it may be mentioned that, owing to the loss of his *Nautical Almanac*, his sextant was useless, and the bearings had to be taken by compass observations every 300 yards, while the distances, amounting in the various surveys to over 2,000 miles, were determined by *stepping*. That is, the explorer counted every step he took during a twenty-one months' walk. He arrived at Muchela Amsinga tired and unwell, but still full of pluck, and hoping to cross the continent and emerge at Loanda. Then fever came on, and his best canoe, containing all his gunpowder, and, worse than all, his quinine, sank in a rapid. He still pushed on, but at the Nambwe cataract he succumbed, and was carried back insensible by his native servants to lie ill during a period of sixteen months. Even during his illness, however, he was not idle, for being carried about in a litter and directing his men what to pick up, he made magnificent collections of plants and insects, with others of birds, weapons, native drawings, &c. The collection of beetles alone contains no less than 13,000 specimens. Dr. Holub is publishing the account of his journeys in Bohemian, English, German, and French, and is about to read a paper before the Geographical Society of Vienna. He will also read one before the Royal Geographical Society of London when he returns to England at Christmas."

DR. OTTO FINSCH, of Bremen, who is on a tour to Micronesia, by order of the Humboldt Institution of Berlin, arrived at Honolulu on June 17, and first of all proceeded to the island of Maui, where he spent some time in making scientific collections and observations of the Haleakala, the largest volcanic crater on the globe. After his return from Maui he made an excursion to the Bay of Waimanolo in order to visit the ancient Hawaiian

burial-grounds. The traveller has collected some 3,000 zoological and 300 botanical specimens, besides a splendid series of Kanaki skulls; all these collections were packed ready for conveyance to Berlin when he sent the news. On July 27 he left Honolulu for Jaluit (Bonham) in the Marshall group, and has no doubt by this time reached the very district he is specially to investigate. From Jaluit he will proceed to other islands in the neighbourhood.

FROM an early sheet of *Petermann's Mittheilungen* we learn that the Dutch exploring vessel *Willem Barents* arrived at Hammerfest on September 24, having succeeded in reaching Franz Josef Land. The expedition encountered stormy weather in September, and found much ice in the Kara Sea and to the north of Novaya Zemlya. M'Clintock Island, in the south of Franz Josef Land, was surrounded by ice, and on the return journey ice was found east of the 55th degree. They left the *Isbjörn* in Matotschkin Scharr. This *Isbjörn* is the little Norwegian cutter in which Capt. Albert Markham and Sir Henry Gore Booth have been cruising in the Novaya Zemlya seas, and which reached Tromsø on September 22. On June 4 they met with the first ice forty miles from the west coast of Novaya Zemlya, and finding Matotschkin Scharr impassable, they sailed along the west coast of Novaya Zemlya to Cape Nassau, when the *Isbjörn* was stopped by ice. Returning again, the Matotschkin Scharr was passed, but the Kara Sea was full of masses of ice. On their return they fell in with the *Willem Barents*, and Markham decided to press northwards again, and this time succeeded in reaching, on September 6, Cape Mauritijs, the north point of the island. Pressing still further northward between Novaya Zemlya and Spitzbergen, the *Isbjörn* reached 78° 24' N. lat., only about eighty miles from Franz Josef Land.

ADVICES received from St. Lawrence Bay state that the American Polar exploring vessel *Jeannette* arrived there on August 25, and sailed for Cape Serdze Kamen after taking in coal. It is believed that there is a prospect of an open winter in the Arctic Sea this year.

In his last official report from Copenhagen, Her Majesty's Consul states that the Danish war vessel *Fylla*, which during the fishing season is stationed off the coast of Iceland, has made some deep-sea soundings and measurements, and brought home many interesting particulars respecting the currents and temperature of the Polar Sea. On one of these expeditions she penetrated so far north in the ice as to find cold water (*i.e.*, under freezing point) from two fathoms below the surface to the bottom, by which was proved the presence of an ice-cold polar current; the existence of this had not been previously ascertained, owing to the impenetrable ice-masses. The soundings were taken both on the north coast and in Denmark Sound. The extent of the polar ice is varying and changeable, for at the time the *Fylla* was able to penetrate many miles direct north in open water from North Cape, Iceland, a mail steamer could not enter Ofjord owing to the ice, and a French war steamer was stopped by ice about five miles from the coast between these points. During the whole time the *Fylla* met with very much drift-wood, which increased in quantity as she advanced northwards. The foregoing notes are of considerable interest when considered in connection with portions of Mr. G. F. Rodwell's letter from Iceland, in last number.

THE October number of the Geographical Society's monthly periodical opens with a long paper by Capt. G. Martin, on the information obtained in regard to the Kurram Valley during the survey operations of the Afghan expedition. At the present juncture, this paper will, no doubt, be read with much interest, but, though the author states that "he has endeavoured to be as brief as possible," we incline to the opinion that his

observations might with advantage have been very considerably curtailed. In the geographical notes we find news respecting the Rev. T. J. Comber's expedition to the Congo, Danish discovery on the coast of Greenland, and the Dutch Arctic expedition. Some further particulars in regard to Mr. Keith Johnston's sad death and the East African expedition are also included under this head.

THE Marine Survey Department, Calcutta, has lately issued a hydrographic notice which contains some information in regard to Pemba Island and the adjacent coast of East Africa. The island is thirty-eight miles long and about thirteen miles wide, including the islands on its western side, which protect the numerous harbours there. The east coast is rocky and straight, with only a few slight indentations. The height of Pemba Island does not exceed 300 feet, and the surface is broken into ridges and valleys, covered with luxuriant vegetation. The soil is rich, the chief produce being cloves, most of the groves of which are situated on the west side of the island. All tropical cereals and edible roots flourish, and on the eastern side the Wapembe, or descendants of the aborigines, keep large herds of cattle. Cocoa-nuts abound, but no oil-making is carried on, most of the nuts being consumed locally and the remainder sent to Zanzibar to be converted into oil. The greater part of Pemba Island is under cultivation, or is grazing-land, but a little forest exists here and there. The island is governed by a Wali, appointed by the Sultan of Zanzibar, and residing at Chaki Chaki, the only place of any importance.

NOTES

WE learn that Dr. Thwaites, F.R.S., C.M.G., has resigned the directorship of the Royal Botanic Gardens, Peradeniya, Ceylon, to which he was appointed in 1849. This step has been for some time contemplated by Dr. Thwaites, on whose somewhat feeble health the charge of the botanical interests of the island, especially in relation to the coffee-leaf disease and the introduction of new kinds of cultivation, has of late pressed heavily.

In a recent paper to *La Nature* on the employment of the hydro-electric batteries and Reynier lamps for domestic lighting, M. Reynier comes to the following conclusions:—The most powerful battery is the Bunsen, Ruhmkorff model; but it is inconvenient and deleterious, and expensive. The most economical and constant battery is the Thomson; but it is costly and cumbersome. The most convenient battery would be a well-arranged rotatory one; but the price would be high (200 fr. at least) and the daily cost enormous. A battery as powerful as the Bunsen, as economical as the Thomson, and as convenient as a well-arranged rotatory one, would still be far from suitable for electric lighting. Hence it is not at present among hydro-electric batteries that we have to look for the solution of a domestic motor applicable to the present electric lamps.

As will be seen from our advertising columns, the Council of the Entomological Society of London is authorised by Lord Walsingham and other gentlemen interested in the diseases of our native game birds to offer to public competition the following prizes:—50*l.* for the best and most complete life-history of *Sclerostoma syngamus*, Dies., supposed to produce the so-called "gapes" in poultry, game, and other birds; 50*l.* for the best and most complete life-history of *Strongylus pergracilis*, Cob., supposed to cause the grouse disease. No life-history will be considered satisfactory unless the different stages of development are observed and recorded. The competition is open to naturalists of all nationalities, and the same observer may compete for both prizes. Essays in English, French, or German, to be sent in on or before October 15, 1882, addressed to the